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JPRS L/9344

10 October 1980

# Japan Report

(FOUO 27/80)



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POLITICAL AND SOCIOLOGICAL

'YOMIURI' ANALYZES CONCEPT OF 'OVERALL NATIONAL SECURITY' IN JAPAN

'Suzuki Concept'

Tokyo YOMIURI SHIMBUN in Japanese 14 Aug 80 p 1

[Text] In order to survive in the international society of the turbid 1980's, it is imperative for Japan, first of all, to establish a cool-headed and broad-visioned strategic policy. The problem of "overall national security," which is creating much talk recently, must also be critically examined in-depth from this viewpoint. Foreign pressure on Japan is increasing daily, such as the demand to increase defense power because of the new tensions in U.S.-Soviet relations, expectations to increase foreign aid as a result of North-South confrontation, etc. Faced with this situation, what should "Japan, a country without natural resources" do to co-exist with the various countries of the world while maintaining national security? Prime Minister Suzuki announced his concept to organize an "overall national security council" soon after he took office. With this concept included, the strategy that Japan should follow is considered, in this article, internally and externally from a three-dimensional standpoint.

Self-sufficiency of 37 Percent in Grain Supply

"Golf courses throughout Japan will be immediately transformed into potato farms and basic food supplies will be rationed."

Secret documents containing this shocking information are carefully guarded in the Ministry of Agriculture, Forestry and Fisheries [MAFF]. This is a contingency measure in case Japan is faced with a food shortage emergency, and among the authorities concerned, it is confidentially referred to as "Mitsuya strategy--contingency food plan."

This document was drafted in 1973. As a result of the drastic reduction in production of soybeans in the United States due to unusual weather conditions, soybean export to Japan was temporarily stopped by the United States. There was an uproar and this document was prepared soon after that.

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Japan relies on imports from the United States and others for most of the required supply of soybean, which is the raw material for soy paste and soy sauce which are indispensable food items for the Japanese people. In contrast to the limited domestic production of only 190,000 tons (MAFF survey of 1978), the amount imported is 4.26 million tons (same survey). Any bad development in the United States has immediate adverse repercussions in Japan. The problem is not confined to soybeans.

While the domestic production of wheat, which is the raw material of bread, amounts to only 360,000, the imported amount totals 5.6 million tons, indicating an overwhelming dependence on imports. As for livestock feed, such as corn and sorghum, practically 100 percent of the demand is met through imports from the United States. If a situation should develop to stop the import of livestock feed grain, what would happen to the cattle, pigs and chickens in Japan?

It is not yet certain in what form the influence of an unusual weather phenomenon, such as the heat wave which assaulted America recently, would affect Japan. Unusual meteorological conditions are not the only factors which threaten the supply of foodstuff from overseas. Needless to say, Japan would be threatened if international conflicts erupt and ocean transportation routes are cut off, and even if dock stevedoring strikes occur in export countries, Japan would immediately suffer.

In overall grain supply, Japan is only 37 percent self-sufficient. "Oil is important but people can survive without oil. However, human beings cannot live without food." (Statement of Toshio Doko, honorary chairman of the Japan Federation of Economic Organizations.) This is the reason why "security guarantee of foodstuff" is being talked about.

With respect to the "overall national security council" proposed by Prime Minister Suzuki, the following appear to be the main objectives when the explanations of the premier and his associates are consolidated:

"First, 'security guarantee' means to protect the country against all types of threats. As far as threats are concerned, in addition to military power threat, there are various types including the threat stemming from shortage of foodstuff and energy. To cope with these threats, rather than having the various concerned ministries deal with them individually, it is necessary to evaluate them from an overall standpoint and to maintain mutual coordination."

To develop comprehensive and coordinated countermeasures against the various types of threats facing Japan--this is the role of the "overall national security council" conceived by the prime minister.

Interchange of Aid, Technology and Culture

Japan has a Peace Constitution which proclaims it will not possess military power. While other great nations of the world utilize military

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power as a diplomatic tool and display power diplomacy, Japan is a peaceful country which uses diplomatic efforts to make up for the fundamental inferiority in security guarantee through military power. Therefore, for Japan, it is all the more important to consider, from an overall standpoint, the task of security guarantees in various spheres.

Problems affecting national security, including the conduct of foreign aid, technological development, cultural interchange and even the improvement of the people's language capability, must be considered from a broad, three-dimensional viewpoint.

Upon receiving the first oil shock, after much bewilderment, Japan promptly took a pro-Arab stand in order to obtain oil. It is still fresh in Japanese memory that this action lacked coordination with Japan's other diplomatic policies and invited international criticisms.

For Japan, which had regarded oil the same as air and was totally unprepared, this was an invaluable experience. There is no strong guarantee that the same mistake might not be repeated someday during a food crisis. In that sense, utilizing the prime minister's proposal as an opportunity, it might not be a bad idea for Japan to enter into a "period of readiness" against all types of threats.

However, when the concept is considered concretely, many problems arise. To begin with, in making known his concept of establishing an "overall national security council," the prime minister states that "he was merely expressing his long-cherished view." However, it is almost certain that the view was triggered by the contents of the report, prepared immediately prior to formation of Prime Minister Suzuki's cabinet, of the "overall national security research group" (Masamichi Inoki, chairman), a personal advisory organ of the late Prime Minister Ohira. The report states that "in place of the fossilized National Defense Council [NDC], it is proposed that an 'overall national security council' be established."

The first problem to arise was the feasibility of dissolving the NDC with the establishment of an "overall national security council." Presently, this is a big issue within the government but it seems that "the view that the NDC should be continued is stronger" (government sources).

The basic argument is that in the event a decision has to be made to call out the Self-Defense Forces [SDF] for defensive actions to meet emergencies, there is fear that too much time might be taken before a decision is made if the authority is given to the "overall national security council," because membership is expected to be large. Foreign Minister Ito has already expressed the following views on this point at meetings of non-governmental organizations.

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A forum to consider national security in a broad sense is necessary, but to abolish the NDC would be detrimental. In the event a decision has to be made to order the SDF to combat operations,,it is necessary that only a few members, as in the NDC, consider and decide.

With the prime minister as chairman, the NDC is made up of the foreign minister, finance minister, Defense Agency director general and Economic Planning Agency director general. Since the attendance of other cabinet ministers and chairman of the Joint Staff Council can be requested, at the discretion of the chairman, the council can, in principle, be utilized to conduct comprehensive discussions on national security.

On this point, the council is similar to the U.S. National Security Council [NSC] which is composed of the president, as chairman, vice president, secretary of state and defense secretary. However, while the NDC constantly assumes a 'passive stance' as an 'advisory organ,' the NSC always displays aggressive actions as the 'policy recommendation organ' of the president.

Even with the NSC, however, although in principle it can deliberate on overall national security matters, in actuality, its consultations are centered on militarily urgent items.

Won't It Become Superfluous?

The opposition parties are intently watching to see how the government's blueprint for formation of the "overall national security council" would turn out. Would a "council" of many cabinet members be established and become a superfluous "fifth wheel" to the cabinet? Or, in effect, would the plan amount to no more than strengthening the military function of the NDC? Moreover, even if outwardly an ideal "overall national security council" be established, would it have the capability to break through the sectionalism of the various ministries and to place priorities on overall policies that really benefit the people?

Eventually, the fate of the "overall national security council," which is regarded as certain to become a controversial issue in the fall's special Diet session, depends on the judgment and leadership of Prime Minister Suzuki.

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Defense Power

Tokyo YOMIURI SHIMBUN in Japanese 16 Aug 80 p 1

[Text] Severe Criticism of 'Ineffective Military Forces'

This incident occurred half a year ago on 21 February. Military attache "A" of the U.S. Embassy in Japan was invited to a meeting of the Fukuda faction of the Liberal Democratic Party [LDP]. The after-effect of the "Brown cyclone" had not yet subsided. A month before, on his return trip from the PRC, Defense Secretary Brown had stopped over in Tokyo and demanded that Japan "make a steady and noticeable increase in its defense power."

Perhaps he let his guard down because it was a small and private gathering. "A" termed his talk, "The SDF as Seen From an American Viewpoint," and spoke openly. In his words, the SDF, which should have been strengthened by annual expenditures of 2 trillion yen, was still only a "paper tiger." He criticized that ammunition was short, the air defense system of the bases was inadequate and the Ground, Maritime and Air Self-Defense Forces are "ineffective military forces" without any coordination.

"By chance, I had the occasion to talk with members of the Maritime Staff Office [MSO] about what might happen in the event of an emergency situation. Let us assume that the enemy landed on Hokkaido. The time has come for Maritime Self-Defense Force [MSDF] ships, carrying troops of the Ground Self-Defense Forces [GSDF] to proceed to Hokkaido. The MSO member suddenly asked, 'In that event, will the fighters of the U.S. 7th Naval Fleet provide air defense?' When I said, 'Won't the aircraft of the Air Self-Defense Forces [ASDF] fly air cover,' he replied, 'Our ASDF is useless. We have the utmost trust in the 7th Naval Fleet.' This tells everything. Members of the ground, maritime and air tri-services do not trust each other's capability."

Within the staff of the Defense Agency, there were angry voices such as, "No foreign military attache has ever made such arrogantly frank remarks. They border on intervention in internal affairs." "A"'s remarks were criticized even within the American Embassy. It was unfortunate that the comments were made in an LDP factional meeting. At the time, the Fukuda faction was leading the attack on Ohira. Since the then Prime Minister Ohira was known within the LDP to be unusually disinterested in strengthening defense power, there was a possibility that the Americans could have been falsely accused. Fortunately, this incident was not made public.

However, the attitude of the American authorities, who had been reluctant to touch on the inadequacies of the SDF, changed abruptly after this incident. In Okinawa, First Secretary "R" and at the Foreign Correspondents' Club in Tokyo, U.S. Forces Japan Commander Gin, both delineated the weaknesses of the SDF, one after the other.

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Turnabout Publicity on Weakness

That is not all. The Defense Agency, which had been insistent about "not showing the inside facts to the enemy," began to publicize the "weak SDF." In this year's "Defense White Paper," mention was made of "weakness" for the first time since the establishment of the defense forces.

"The armament of the GSDF is outdated. The air defense power and the anti-nuclear submarine capability of the MSDF on the high seas are extremely poor. Most of the escort ships are inadequately equipped with anti-air weapons and electronic warfare apparatus. The ASDF is also inferior in air defense capability of bases and radar sites."

[The Defense Agency claims], "To those who say we have taken the first step toward becoming a big military power or who claim they can hear the sound of marching troops just because we accelerate the mid-term operational estimates (mid-term plan), we are merely indicating that 'in actuality, our SDF has only this limited military power.'"

Akira Watari, who laid the groundwork for publicizing a "weak SDF" and who resigned last June as administrative vice director general of the Defense Agency, explains the situation in this manner. There was an immediate goal of increasing the budget as much as possible. Furthermore, it was the result of a shrewd calculation which took into account the people's defense consciousness which vacillates subtly.

The persistent American demands to increase defense power and the Soviet threat which began to be clearly seen in Afghanistan--the existence of the SDF was objectively viewed in the light of this situation and it was evaluated that even if its "weakness" were exposed, there would no longer be jeers that "if it is that weak, we are better off not having it." Thus, the Defense Agency reversed its stand.

The GSDF has: 155,000 troops, 830 armored tanks, 1,330 recoilless guns, 1,860 mortars and 860 field artillery pieces.

The MSDF has: 48 escort ships, 14 submarines, 40 minelayers and 25 patrol ships.

The ASDF has: 120 F-4EJ fighters, 158 F-104J fighters and 55 F-86F fighters.

In numbers only, GSDF troops rank about the same with Israel. In naval ships, Japan compares with the Italian navy and in aircraft, with Swedish and Czech forces. Needless to say, military strength depends not on the quantity of armament but on the quality. This is especially true in modern warfare.

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It is an indisputable fact, however, that the police reserve forces which had been organized 30 years ago, to fill the gap of the U.S. Army divisions in Japan which had been suddenly dispatched as the UN Forces simultaneously with the eruption of the Korean War, to maintain internal security, to hold rear communications lines and to maintain law and order, had grown into a "military power" comparable with other countries.

"Present-day Japan cannot defend itself against small threats and cannot assure effective coordination with the United States to defend against large threats."

The above statement was made by the Defense Agency's Internal Bureau when the budgetary allocations for the FY-1981 budget were drawn up.

It is true that from the Defense Agency viewpoint, of the 830 armored tanks in the GSDF inventory, 70 percent are Type-61s equipped with 90 mm guns, which saw action in the Korean War, and the MSDF escort ships, which participated for the first time in Rimpac-80 (joint maneuvers of countries rimming the Pacific Ocean), were not equipped with the "visual and audio capability" (intelligence gathering devices) to be useful in electronic warfare. The air defense power is also inferior.

But to conclude that it is a hopeless "military power" would be misleading.

A certain Defense Agency official, who has frequent contacts with the U.S. Defense Department, unhesitatingly offers the following comment:

"If the SDF were utterly useless, the Americans would not say anything. The Americans are making various remarks to us because if some effort is put into the SDF, they will be of considerable help to the United States, and also play an effective role for Japan."

Even if it is called "weak," if the SDF attains the goals of the "mid-term operational estimates," it will be equipped with armament comparable with the United States and Europe such as the F-15, next-generation main fighter-interceptor, the E-2C, an early-warning aircraft, and the P-3C, an anti-submarine patrol aircraft. Simultaneously, if there is strengthening of the air defense system of bases and radar sites, ammunition supply, air defense of naval ships and anti-submarine capability, there would be a "limited but effective defense power." (Statement of a leading Defense Agency official) The SDF would then have the capability, in the event of emergencies, to cope with the situation until the arrival of American military rescue, and during peacetime, in place of U.S. forces, to conduct surveillance of Soviet military movements in Japanese territory.

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#### Oscillating Coordinate Axis

As the plans in the "mid-term operational estimates" begin to materialize, innermost views begin to be expressed. Recently, from the top echelon of uniformed officers, views have begun to appear doubting the SDF capability after the "mid-term plan" is fulfilled.

"The General Outline of Defense Plan" (Japan's defense plan approved by the 1976 cabinet with the so-called "mid-term" as the Defense Agency's estimates to carry out the plan) was formulated to achieve "capability to cope with limited small-scale attacks." Views expressing doubts about the mid-term goals might be appearing to prepare the ground for the "next round of defense augmentation." Military experts, however, have expressed definite viewpoints.

"We have the power to resist by holding a certain area for a certain period, but we do not have the capability to oust and destroy the invading forces." (Statement of Takeda, chairman of the Joint Staff Council)

"Although we speak of small-scale and limited attack, we do not know when, where and in what strength the attack might come. We should consider means to maintain the balance between the Soviet forces in the Far East, on the one hand, and the U.S. Forces Japan, the 7th Naval Fleet and the SDF, on the other, and to build up the defense power after reweighing the situation." (Statement of a top echelon member of the MSDF)

Hinting that a reappraisal of the "General Outline" is necessary, Defense Agency leaders are frowning and claiming that "it is like pouring cold water on the progress that we have gradually made till now and forcing us to retreat."

The future plans envisioned by the Defense Agency and the SDF are indefinite. Yet, irresponsible arguments and warnings are becoming rampant.

Japan is extremely allergic to the military because of defeat in World War II. There is faith and hope that if the people rely on the Peace Constitution and do not stir up trouble themselves, they will not be attacked from the outside. Furthermore, there is a feeling of dependence on the United States that if an emergency occurs, the United States will be sure to come to the rescue. As the U.S.-Japanese relations fluctuate, each of the beliefs begins to oscillate.

Before discussing what to do about the present-day SDF, the time has come for us to seriously think about what we are trying to protect from what and how? Basically, defense power is only one of the means to accomplish that.

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U.S. Pressure

Tokyo YOMIURI SHIMBUN in Japanese 17 Aug 80 p 1

[Text] 'Danger of Explosion' Telegram

"The defense budget request is reported to have been placed in a special category, but will this meet the American demand to shorten by 1 year the plans of the mid-term operational estimates?"

"With an increase of only 9.7 percent over this year's budget, can you make steady and noticeable increase in defense expenditures?"

At the meeting on 5 August of foreign correspondents in Tokyo, called to explain the "Defense White Paper," the reporters' questions focused on the defense budget.

The Finance Ministry officials, with sullen looks, claim that "In spite of financial difficulties, out of consideration for U.S.-Japan relations, we did the best we can." The Defense Agency's Defense Bureau Director Shioda was bewildered at the reporters' questions, which differed completely from the criticisms of other ministry officials who complained that "only the Defense Agency was being favored."

The special treatment of the defense budget was also taken up in Washington, D.C. The "special category" which was being criticized within Japan as "the direct route to military fascism" (Asukada, chairman of Japan Socialist Party) was being interpreted overseas in an entirely opposite manner.

On 31 July the Subcommittee on East Asian and Pacific Affairs (John Glenn, chairman) of the Senate Foreign Relations Committee held a closed hearing. At this meeting, heated debate was being conducted on Japan's defense efforts following the Japanese cabinet's approval of budget allocations on 29 July or 2 days earlier.

Government representatives attending were Robert Komer, undersecretary of defense [for policy], and Richard Holbrooke, assistant secretary of state (in charge of Asian and Pacific Affairs). Both were strong advocates of Japan's increase in defense power. However, on this day, both turned pale at the sharp attacks of the congressmen, one after another.

"What is the meaning of this decision by the Japanese Government? Are you faithfully transmitting our statements to the Japanese side?"

"What will change with an increase of only this size? Is it not necessary to tie with trade our demands to Japan for defense efforts?"

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Senator Percy, who was supposedly of the dove faction, was among the questioners, and he joined other congressmen in the attacks on under-secretary Komer.

"Members of the U.S. Congress are evaluating Japanese efforts in the defense area in terms of Japan's ability to pay...They are highly emotional and there is danger of explosion..." Such an analysis was received from the Japanese Embassy in Washington, D.C.

'Mid-Term Plan' Proceeding Smoothly

The defense budget, unofficially decided upon at the time of budget requests, amounted to 2 trillion 446.6 billion yen. This is an increase of 216.4 billion yen over this year's budget. Of this amount, 161.2 billion yen was included in the Finance Ministry's estimate. Therefore, the request for the remaining 55.2 billion yen was approved as "special allocation" out of consideration for U.S.-Japanese relations, despite Japan's financial straits. This decision was made to fulfill the official promise made by the late Prime Minister Ohira at the U.S.-Japanese summit meeting in May to President Carter that "with the early realization of the Defense Agency's 'mid-term plan' as the goal, Japan will make noticeable efforts toward defense and agree to increase defense expenditures, as a member of the Western alliance."

In the year-end budget adjustments, salary increases of 2 to 2.5 percent will be added. Thus, the budget revision will result in a maximum increase of 12.2 percent over this year for a total budget of over 2 trillion 520 billion yen.

Furthermore, the Defense Agency has the commitment of the Finance Ministry that depending on the international situation, the GNP, price trends, etc., supplementary requests that might be submitted will be approved. Defense expenditures will be double that of 6 years ago.

"Well, we did want to ask for a little more, but the Defense Agency has not received, heretofore, any favorable treatment...Even with a magnet, there is a limit to its power to attract, and there is nothing we can do if they are not attracted, no matter how hard we try."

The Defense Agency's Administrative Vice Director General Hara, formerly of the Finance Ministry, who had been criticized by the Foreign Ministry as being "weak" for "having jumped on the Finance Ministry's bandwagon to play it safe" in the final bargaining stages (Foreign Ministry sources) seems to be personally satisfied with the arrangement of "special category." Perhaps he is counting on the year-end budget revision as the time of decision.

While pressured internally and externally, the Defense Agency is busily engaged in compiling budget requests [for next FY] with late August as the deadline.

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Of the budget request, the amount allotted for new projects in 1981 amounts to 76.4 billion yen. In the previous year's budget, 120 billion yen was requested for new projects but only 35 billion yen was approved. Thus, a carry-over deficit appeared soon in the "mid-term plan."

In the next FY budget, this deficient amount will be recovered and the following will be procured: Mine-laying C-130 transports which the Americans are strongly demanding; missile escort ships of 4,000- to 5,000-ton class; 203 mm self-propelled howitzers to strengthen GSDF armament; and short-range ground-to-air missiles (SAMS) for air protection of military bases.

Procurement of the C-130s will comply with the American demands to "develop immediately the capability to blockade the three ocean channels," and each aircraft will cost 3 billion yen. Orders for six aircraft will be placed in FY-1981. A single aircraft can carry about 15 mines of the 2,000-pound class. Japan has two mine-laying ships. A veteran in this field, Japan has confidence in mine-laying since the former Imperial Navy days, but the ships cannot compare with the C-130 in speed.

"If Japan possesses the capability to completely blockade the three ocean channels, Americans will not fail to come to our rescue in emergencies." Since this is the view held by a high government official, the C-130 can be said to be the showpiece to Americans of Japan's maximum "defense efforts" within the limits of the special category budget allocation.

At the time the mid-term plan was drafted, there was no concrete talk of obtaining the C-130. Consideration was given only to a replacement for the C-1 transport because of its short cruising range and the problem of procurement costs. Since procurement has been decided for FY-1981, this is a marked acceleration of the plan.

Little noticed mid-term plan items, such as short-range SAMS and ammunition, which could not be procured because of the expensive outlays for the next-generation main fighter-interceptor, the F-15 (6 billion yen apiece) and the early warning aircraft, E-2C (9 billion yen apiece), are also going to be obtained.

"The Americans are saying that the available ammunition supply will do, and as for blockading the three ocean channels with mines, it is sufficient if you can pretend you have the capability." Buy only items you need to do that--so says a certain Defense Agency official.

At the time of drafting the "mid-term plan," there were doubts that the plan could be carried out. The plan began to be implemented at an unexpected pace because of the urgent American demands on the grounds of the Soviet invasion of Afghanistan. "From a long-range viewpoint, circumstances have turned favorable," according to a Defense Agency leader.

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Indications of Concentrated Year-end Attacks

The hysteria in Washington, D.C., particularly the U.S. Congress, does not appear to be subsiding. Fanned by Congress, high U.S. government officials are using every means at their disposal to show strong dissatisfaction with the "9.7 percent increase."

"With a limited request such as this, Ohira's official promise to accelerate the mid-term plan by a year cannot be fulfilled. If neglected, the defense problem will become a political issue and other problems might become inflamed."

Of course, by other problems, trade issues such as [exports of] electrical and electronic apparatus and automobiles are meant. Even presidential candidate Anderson (Republican Representative), who belongs to the Liberal faction and is known as a sensible person with international vision, is beginning to say, "If the Japanese are not going to restrain themselves on automobile exports, pressure must be put on them to spend more money on defense."

"Regardless of whether it is bad or good (i.e., foreign pressure), it is effective. Even the highbrow Foreign Ministry is agitating that if the situation is left as it is, cracks will appear in U.S.-Japanese relations. There were no indications from the start that the people's awareness of defense had increased or that the government took the initiative to increase defense outlays to counter the Soviet threat... However, from now until the year-end, 'foreign pressure' will mess up matters."

That was the comment of a Defense Agency's leading official, recollecting the course of events in determining the budget request allocations.

It is difficult yet to predict the eventual FY-1981 defense budget. Just as the budget request allocations were swayed by the frank demands of the United States from the beginning of January, the year-end budget formulation might be conclusively decided by American "foreign pressure." Already, there are indications. George Bush, who will become vice president in the event a President Reagan's regime is established, will visit Japan. Following him, Defense Undersecretary Komer, who is the strongest advocate in Carter's regime of the necessity of Japanese defense efforts, will arrive in September. There are signs that the defense budget of a Far Eastern country might become one of the political issues in the U.S. presidential elections. It seems that neither party will be satisfied with the budget allocation of "special category."

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POLITICAL AND SOCIOLOGICAL

SUZUKI'S PROBLEM TO BREAK AWAY AS 'OHIRA SUCCESSION CABINET'

Tokyo MAINICHI DAILY NEWS in English 20 Sep 80 p 5

["Nagatacho Doings" column by Takehiko Takahashi, adviser to the MAINICHI paper: "Can Suzuki Break Away From Being 'Ohira Succession Cabinet?'" ]

[Text]

The extraordinary session of the National Diet is likely to be convoked on Sept. 29. Earlier the government and Liberal-Democratic Party had wanted this special Diet session to be convoked in October. One reason for this is that Finance Minister Michio Watanabe is leaving on Sept. 26 to attend the general meeting of the International Monetary Fund and his return to Japan is scheduled on Oct. 2.

The opposition parties were not in favor of the October Diet opening. The reason for this concerns the enforcement of the arbitration decision in regard to the Japanese National Railways. The JNR is carrying out a revision of train schedules from Oct. 1. For this the cooperation of the labor unions is necessary. As the JNR labor unions see it, whether a wage increase is possible depends on the government's total acceptance of the arbitration decision.

In order for the government to accept the arbitration decision in entirety, it is necessary to be assured of revenue sources. For this purpose, a bill for JNR's rehabilitation was sent to the

previous Diet session while the Ministry of Posts and Telecommunications introduced a bill for a raise of postal charges.

No action on these bills took place because of the unexpected passage of a nonconfidence motion in the previous Diet session.

Unless these bills are passed rapidly in the forthcoming extraordinary Diet session, the government will be unable to give its okay to the arbitration decision. It is necessary for the government to promise the total enforcement of the arbitration decision prior to the revision of train schedules on Oct. 1.

It can be said that this has been the big reason why the opposition parties have pressed strongly for the convocation of the extraordinary Diet session within September.

The government is also desirous of having the revision of train schedules carried out on Oct. 1. That is why an agreement to convoke the special Diet session on Sept. 29 was reached at the meeting held on Sept. 9 by Chief Cabinet Secretary Kiichi Miyazawa and LDP Secretary General Yoshio Sakurauchi.

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The government and LDP would like to devote the extraordinary Diet session to the unsettled business of the Ohira cabinet and to have the next ordinary session of the Diet become the first for Prime Minister Zenko Suzuki. Accordingly, although Prime Minister Suzuki will deliver his general-policy speech, the legislation to be introduced will be limited to the bills held over from the previous Diet session.

## NHK Reception Fee

The bills not acted on in the previous session include one concerning NHK reception fees, but this is considered non-urgent and is not likely to be reintroduced in the extraordinary session.

Convocation of the extraordinary Diet session will be formally decided at a meeting of the executives of the House of Representatives steering committee on Sept. 19. The government and LDP will draw up the schedule after listening to the views of the opposition parties, but there is strong likelihood of the special session being convoked on Sept. 29.

Since Prime Minister Suzuki will be delivering his policy speech, this extraordinary session will become his debut on the Diet stage. In this policy speech, centering on rehabilitation of state finances, emphasis will be placed on taking care of the affairs remaining unsettled from the Ohira administration. Announcement of Prime Minister Suzuki's new political concepts is likely to be held over to the next ordinary Diet session.

There is a problem here for the ministers of the Suzuki cabinet, particularly those who had close relations with former

Prime Minister Ohira. Foreign Minister Masayoshi Ito has recently made a round of visits to Burma, Thailand, Pakistan, India and the People's Republic of China. He stated on this tour that "Japan's diplomacy will be a continuation of that of the Ohira administration."

Nevertheless, if emphasis continues to be placed on a continuation of the Ohira administration's diplomatic policy, Prime Minister Suzuki's existence will become shadowy. The big problem is at what stage to make the transfer from "a continuation of the Ohira administration's diplomacy" to the Suzuki administration's diplomatic policy.

Prime Minister Suzuki's policy speech at the extraordinary Diet session might provide the opportunity to make this change. It is said that the Suzuki administration places emphasis on "harmony" as the fundamental policy of its politics. At a recent LDP study meeting, a printed reference to this was distributed among those attending but in actual speaking, that part was omitted.

It might be said that this is because the "harmony" spoken of by Prime Minister Suzuki and the actual important decisions on the establishment of state finances have phases in which the two do not complement each other.

Attention is being centered on whether the Suzuki cabinet, which has been criticized as having "no principle," can break away from being an "Ohira succession cabinet" at the forthcoming extraordinary Diet session.

*(The writer is an adviser to the Mainichi Newspapers and former chief editorial writer).*

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POLITICAL AND SOCIOLOGICAL

UPPER HOUSE ELECTORAL REFORM BILL IN TEST

Tokyo MAINICHI DAILY NEWS in English 16 Sep 80 p 4

["ZOOMING IN" column by Hideo Matsuoka: "Upper House Electoral Reform"]

[Text]

Prime Minister Zenko Suzuki seems to be concentrating entirely on keeping harmony within his cabinet, without caring about minding the matters of policy-making either by the party or his cabinet. One exception is his instruction to the party to prepare a bill to revise the present national constituency system in the House of Councillors election for presentation at the coming regular session of the Diet.

Indeed, the national constituency has long been a problem in the House of Councillors election. To be elected in the national constituency, the candidate needs a national organization or voters or has to have excellent public exposure.

Government and labor organizations are far out front in terms of availability of national networks of influence. They are followed by agricultural cooperatives, religious organizations, medical associations and other trade and professional groups. Nearly all of the Japan Socialist Party members of the House of Councillors returned from the national constituency are former labor union leaders.

Those belonging to the Liberal-Democratic Party are mostly ex-bureaucrats, supplemented by the so-called "media celebrities" such as *rakugo* and *kodan* story tellers, *manzai* standup comics, singers, announcers, actors and actresses.

Whenever time comes for House of Councillors election, the LDP taps government ministries for possible candidates. In fact, it assigns the ministries with quotas, like one from the Finance Ministry and two from the Construction Ministry. The ministry higher-ups would then knock their heads together to decide who should respond to the LDP call. In this casting about, they usually settle on persons known to others more for political flair than bureaucratic efficiency. If they cannot find a suitable one in active service, they reach for retirees from their ministry. This is how the nation's bureaucracy is linked to the political world at the root.

The LDP still has a vast pool of candidate possibilities among bureaucrats. But the party is beginning to feel the drying up of the reserve pool of "celebrity" candidates. These "celebrities," mostly en-

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tertainers, have become more mindful of the gains and losses of turning politicians. On being approached by the party for candidacy, they would weigh their professional earnings for the next six years against what they would make as members of the House of Councillors and assess the possibilities of reelection at the end of the six year tenure in the Upper House and also the chances of going back to their old profession should they fail to be reelected.

Moreover, it is public knowledge that nobody gives serious consideration to these celebrity-turned politicians, especially entertainer-turned politicians. They are not treated as serious politicians even within the party. More and more celebrities who value themselves have begun turning their thumbs down on LDP candidacy overtures.

#### Celebrity Candidates

In the reelection of a celebrity-turned Councillor, the party has to give the candidate its organizational help because by this time the candidate's "celebrity" has more or less worn out. If the celebrity has become so much worn out that the candidate needs massive campaign help from the party, the party might as well ticket a more politician-like candidate. An entertainer-turned Councillor who is no longer boffo with voters at reelection time is more a burden for the party than an asset. The Socialist, Komeito, Democratic Socialist and Communist parties can tell, from their national organizations, the limit of successfully fielding national candidates. As for the LDP to have the run of the House of Councillors it cannot afford to be content with the number of ex-bureaucrats elected from the national constituency. It must fill the

deficiency with celebrity candidates. But the celebrities are becoming less willing to take up the LDP candidacy offers. More than that, their reelection is becoming ever more difficult. Herein lies the cause for Suzuki to call for a change in the House of Councillors election system.

It is costly to campaign nationwide. It is physically exhausting, too, both for the candidate and campaign workers. Turning the whole country into one at-large electoral district is unprecedented in the world outside Japan. In these contexts, every political party sees the need to change the election system. If the present system had been favorable to the LDP, however, the party would not have moved for its revision. The party is proposing a revision because it thinks it cannot sustain its present House of Councillors edge very long under the present system. The motive for revision is highly partisan.

In the House of Councillors election, continued LDP domination of the races in the local constituencies is assured in the absence of any possibility for opposition parties to deploy a truly unified campaign. So, there is no need for the LDP to change the local constituency system.

In fact, the most urgent need for revision in the electoral field is for reapportionment to redress the disparity in the representation-voter ratio among different constituencies. But the LDP is not interested in reapportionment because it is not polling very well in urban constituencies where a reapportionment will increase the representation. The party is, therefore, interested solely in rewriting the national constituency system.

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The new system being eyed by the LDP for national constituency election is the "compulsory proportional representation." In this system, voters will be voting for political parties instead of individual candidates. Each party will be allotted national constituency seats in proportion with the number of votes it receives. Prior to the election, each party will file the list of its candidates with electoral supervisory authorities. Those on the list will become the national constituency Councillors if their party polls enough for their election. The candidates will be numbered in the order of preference. If a party's polling is only enough to have 10 national constituency Councillors, candidate No. 11 and on down will fail to be elected. On the surface, the plan appears easy to enforce. But there are many problems involved.

It is a doubtful wisdom to fill the Upper House with two kinds of Councillors—one elected on the individual basis in local constituencies and the other elected on the partisan basis in the national constituency. Moreover, it is odd that political parties, in the absence of a political party law to control them, suddenly assert themselves in the Election Law.

The planned reform will increase the partisan control of the House of Councillors. Is this

acceptable? In listing the candidates in the order of preference, greater preference will naturally go to the incumbents, increasing the entry barriers for new faces. It will precipitate gerontocracy in the House of Councillors. Moreover, numbering the candidates for preference will intensify factional struggles.

Because of such drawbacks, the Komeito and Democratic Socialist parties are against the LDP reform plan. The Komeito is proposing an 11-block plan to replace the national constituency. The country will be divided into 11 big blocks, possibly in the hope that it will cut both the cost and labor of campaigning to one-eleventh. The party has been conducting its national constituency campaigns by assigning the candidates to its regional block votes. I do not know if the party had 11 blocks. Whatever the case, the party's reform plan is largely in its partisan interest.

The Democratic Socialist plan is something new and deserves attention. Like the Komeito plan, it proposes to divide the country into big electoral blocks. But it differs from the Komeito plan fundamentally in that it proposes to abolish the present local constituencies. Under the Democratic Socialist plan, all Councillors will be elected under one and the same block system. This deserves to be considered a reform.

### Population Basis

In the DSP plan, the present Upper House quota of 252 Councillors will not be changed. The block representation will be apportioned on the population basis, to be reapportioned at every national census. This will solve the present constitutional imbroglio of apportionment disparity.

This is a good plan. The DSP is a minor party in the House of Councillors, being able to have only six (four in the national, and two in local constituencies) in the election this spring. Together with holdovers, the party has only 12 seats in the Upper House. Some may point out that the DSP, being a minor party in the House of Councillors, is being bold to offer such a plan because whatever change is made in the House of Councillors election system will not have a substantial effect on it.

Although I consider the DSP plan to be the best available now, laws are passed on the parliamentary strength of parties. The LDP plan thus has the best chance of passing. But it is a daring adventure to experiment with the "compulsory proportional representation system" which has not yet been enforced in any of the countries of the world. Having gained a safe majority in the legislature, the LDP seems to have turned into a gathering of daring adventurers.

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ECONOMIC

U.S., JAPAN FIND THEMSELVES IN ANOTHER DISPUTE ON 'TRANSPORTATION'

Aviation Pact Should Be Reviewed

Tokyo NIHON KEIZAI SHIMBUN in Japanese 3 Jul 80 p 7

[Text] The gap between Japan and the United States is about to be further widened because of [disputes over such issues as] aviation and shipping. Against a background of rising national interest, U.S. business has launched a campaign against Japan, and Japan is now compelled to take a defensive posture. Various [economic] circumstances complicate U.S.-Japanese relations; for instance, in the area of aviation, the U.S. is in an overwhelmingly advantageous position, while Japan is in a predominant position in the area of shipping. It will not be easy to find ways and means to solve these problems. In particular, both aviation and shipping have taken the place of a "second army" of sorts in the United States and, in the tense international climate following the Afghanistan incident, the reindustrialization of U.S. industry has become a leading topic of discussion. Much as this has not yet surfaced [on a scale] comparable to U.S.-Japan friction over automobile [trade] or the problem of opening its door to procurement involving the Nippon Telegraph & Telephone Public Corporation [NIT], there is an ominous side to this matter which could, like a spark, ignite at any moment.

Over one month has already passed since the start of the second U.S.-China aviation talks on 19 May in Washington. According to the [Japanese] Ministry of Transportation, "It is unusual that talks be continued this long; moreover, little information has come in. This indicates there is a strong possibility that an agreement will be reached." Shizuo Asad, President of Japan Airlines, has been quoted as saying, "It looks as if the White House is doing its utmost to detain the Chinese delegation which is trying to return home. The U.S. [side] is probably urging that an agreement be reached at all costs." Both the Ministry of Transportation and Japan Airlines are watching the course of the negotiations with apprehension.

Although the U.S.-China talks appear at first glance to bear no connection with Japan, a serious problem is in fact contained herein. Direct flights

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between the United States and China, traffic between which has not reached the level of that between Japan and the United States or China, have been inconceivable on the basis of profitability, and it is perceived [by the Japanese side] that flights to China will "invariably be operating via Tokyo." Those in the U.S. aviation [industry] are emphasizing the view that a U.S.-China pact will be completed in September, following which Japan-U.S. and Japan-China aviation talks would be scheduled.

The U.S.' rights to routes between the U.S. and China will pose a particular problem. It is reported that the U.S. has requested Peking, Shanghai, and in addition, Canton, while China has cited the names of New York, Los Angeles, San Francisco, and more recently, Chicago, Washington, Seattle, and Honolulu. In contrast to this, only one point in the United States is recognized as Japan's 'right to beyond' in the Japan-China aviation pact; this [situation] is in need of rectification.

At the same time, whereas there are restrictions under the U.S.-Japan aviation pact on the Japan's 'rights to beyond', those of the United States are unrestricted. Extensions to China are also freely allowed [in the current set-up]. As a result, the Japanese maintain this to be unfair and have many times pressed for a revision in the past, but U.S.-Japan aviation talks were broken off in March, 1978 and have not been resumed. If a hold is put on the results of the U.S.-China negotiations, this would provide an opportunity to re-open U.S.-Japan negotiations. However, the chances of success in correcting the [presently] unfair [situation] are not adequate; in fact, recently, the offensives waged by the U.S. side are more conspicuous [than actions taken by the Japanese]. During a stopover in Japan on his way home in April from the first U.S.-China aviation talks, Marvin S. Cohen, head of the CAB, met with Mr Matsumoto, Chief of the Civil Aviation Board, Ministry of Transportation, and Asada, president of Japan Airlines. Touching at that time on the increase in Saipan route flights that had been requested, Cohen astounded the Japanese side when he went so far as to state that, "If you discriminate against U.S. companies, we will take sanctions against you."

The [official] U.S. aviation policy has become clear with President Carter's policy of relaxing regulations. This is characterized by a reduction in government intervention in [the affairs of] airline corporations and an attempt to put the principles of competition into practice, in short, liberalization of the air. A policy that gives flexibility regarding transport rate decisions and new entrants [into the transportation industry], the effort to expand this to international aviation as well has produced discord. Notice has been given Japan that, "if relaxed regulations are approved, extension restrictions on Japan's rights to routes to the U.S. will also be relaxed."

In contrast to this, concerning the single corporation set-up in Japan in which Japan Airlines operates international lines (for short-distance charter flights, All-Nippon Airways is also approved), "it has decided in

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particular, by the Ministry of Transportation, that "recently, on the basis of the fuel problem and [crowded] airport conditions, it has become necessary to toughen regulations." This does not consist merely of a difference in policy; the reason for opposition to the United States not only by Japan but by European airline corporations as well is that if this industry, which is dominated by U.S. airline companies, is liberalized, such a development would work to the advantage of the United States.

But, the U.S. share of world airline [traffic] is undergoing a relative setback due to the growing influence of Japan and Europe, and developing countries' penetration in aviation. In the United States, the airline companies occupy the position of a "second air force"; this setback means that the ability to transport goods in times of emergency grows weaker. Although the European airline companies had countered by asserting that "the NATO-affiliated airline companies will cooperate," a heightened sense of crisis followed the Iranian and Afghanistan [affairs] and it is being reported that voices sympathetic to the U.S. position are heard, even though not widely spread, appeared.

Furthermore, in Japan, the trade friction over automobile and the problem involving the Nippon Telegraph and Telephone Public Corporation [NTT] opening market remain unresolved. Although the Japanese side is adopting a posture of assurance that the corrections of unfair [practices] will be taken care of: "trade problems never played a part in past aviation talks," in no way are they optimistic. It is because of this, states, Asada, that "some are voicing the opinion that the cause of the [current] trade friction problems should first be examined, then begin the U.S.-Japan aviation talks."

Although Japan Airline itself is strongly advocating that "the correction of unfair practices must come first," there is also the impression that the Ministry of Transportation is being cautious. Merely because a breakdown in the talks is likely, and due not only to the fear that the United States will take sanctions but also because it may be possible to give the impression that the U.S.-China talks failed because of Japan, some are saying that "it would be wise to limit this to the U.S.-China problem this time."

It has been pointed out that as seen in the NTT problem which was felt to be unreasonable from the Japanese side, a persecution complex existed behind the U.S. demand at the negotiation table. Is a strategy independent of aviation available or not? It would appear that firm yet flexible countermeasures are called for on the Japanese side.

#### Disputes Over 'Shipping'

Tokyo NIHON KEIZAI SHIMBUN in Japanese 4 Jul 80 p 7

[Text] A U.S.-Japan feud is clearly apparent at the moment in shipping as well. The six companies that form the nucleus of Japan's shipping industry,

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Nippon Yusen, Mitsui O.S.K. Lines, Japan Lines, Kawasaki Kisen, Yamashita Shin-Nippon Kisen, and Showa Shipping, have applied to the FMC (Federal Maritime Commission) for an extension of the space charter agreement (involving Far East-North America shipping lines) which will run out in August. Objections to this have been lodged by four U.S. shipping companies, thus complicating the matter; it is projected that a hearing will be held in August.

The six companies agreed to cooperate with each other in the use of container ships. The Ministry of Transportation is actively supporting [this arrangement] by insisting that [such an arrangement] "is an effective way to eliminate surplus tonnage and also fulfills the Ministry's desire to save energy." The U.S. shipping industry contends that "the six-company consortium is banding together as if it were one company, yet [when it comes to] International Freight Cartel [negotiations] each of these companies exercises, oddly enough, its right to vote individually [as members of] the National Federation of Freight Industry Trade Unions. This backlash by U.S. shipping directed at the Japanese merchant fleet formed under the aegis of the [Japanese] Ministry of Transportation may be characterized as "criticism of 'Japan Inc'."

The Japan shipping industry is particularly worried over the omnibus bill [currently] under deliberation in the U.S. Congress. The concern centers over a clause contained therein that would make the IA (Independent Action) system the responsibility of the National Federation of Freight Industry Trade Unions. The IA provides that, in the event of dissatisfaction with a decision of the National Federation of Freight Industry Trade Unions, members may put into effect independent freight [structures] and provide independent service provided they give 90-day advance notice. Under the regulations of the U.S. Antitrust Act, the United States recognizes only open alliances (European shipping routes fall under the domain of closed alliances) that allow the free entry and exit of members. As a result, the influence of non-member ships has become large and, according to the Ministry of Transportation, "the introduction of the IA system will render the union tantamount to nonexistence." This stands in fundamental opposition to Japan which for regular liners adopts the shipping policies central to the union.

The Japan side believes that congressional maneuvering by one of the major U.S. freight companies, Sealand Service Inc, which is also an active leader of the opposition to the space charter system, lies behind incorporation of IA into the omnibus bill. The bill was first proposed this year by Representative John Murphy and was introduced at the House. The original bill did not include the IA clause, but this suddenly turned up about the same time that Sealand withdrew from the Far East-North America shipping line freight union at the end of March.

In the eyes of many in shipping, the aim of the U.S. shipping industry "lies, as in the case of Sealand's withdrawal from the union, in the

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total destruction of the solid share held by Japanese shipping interests." The 'freight loading ratio' in Japan (exports to North America) of Japanese ships is 63 percent as opposed to 27 percent for U.S. cargo vessels. It has been determined that under the existing union situation, the share of trade held by U.S. ships will fall steadily.

The omnibus bill aims basically at streamlining U.S. shipping policy. Clauses which the Japanese Ministry of Transportation criticizes as considers the level of operation that of operation that of developing countries, for example, "The U.S. cargo loading ratio for trade goods directed to this country shall be 50 percent," and "simplification of EMC procedures," were incorporated into the same bill, but these were discarded during the course of congressional review, with only the IA clause which is readily acceptable under the Antitrust Act--remaining. Nor, with the involvement and indictment of Representative Murphy in connection with the baited investigations of FBI [operatives] posing as Arab millionaires, is the passage of this bill by Congress viewed as certain.

But both the Ministry of Transportation and the shipping industry warn that "the basic thinking of the U.S. as manifested in the omnibus bill will not change. Even if the present bill is rejected, this matter will resurface in another form."

Last spring, President Carter established a task force which carried out forecasts on shipping policies. Although consolidation of the opinions of the departments involved was difficult, and this effort was reportedly not entirely successful, a sense of crisis over the present situation with regard to U.S. shipping can be inferred from Carter's report to Congress.

To quote, "What is important is that, in times of war or national emergency, the merchant fleet serves the function of a reserve fleet of the navy.... [however] our merchant fleet is transporting but 5 percent of the goods our country trades with other nations."

Government assistance to the shipping industry in the United States does not compare unfavorably with that of various foreign countries. There is both a building cost differential subsidy and an operating cost differential subsidy system, but U.S. shipping places orders at the shipyards in Japan and Europe and, as for 'Registry of convenience', uses sailors from developing countries, where wages are low. In terms of the actual tonnage controlled, including that of 'ships of convenience', U.S. tonnage is on a par with that of Japan; but, tonnage transported by ships of U.S. registry is only 8th (Japan is second behind Liberia) and is even surpassed by the USSR. There is no need to look at tramps (dry cargo).

For the last 20 years, U.S. airplane manufacturers have had the capability to deliver over 80 percent of privately owned jet passenger planes in the non-communist countries while little concern has been shown over shipbuilding. Although the shipbuilding capability of Japan represents one-half of the world capacity [37% of total launching in 1979, a bad

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year), airplane production lags [far] behind. This difference, contends those parties concerned, "reduces to the difference in the respective strengths of aviation and shipping." For the United States, liberalization of aviation is connected to the expansion of U.S. interest, but for the weak shipping [industry], it is protectionism rather than the issue at hand. In any case, it is perceived that a most effective shipping policy will be worked out.

What the Japan side cautions is that regardless of the large international influence that the U.S. transportation policy will have, this policy includes many self serving features. Even the IA [concept] originally appeared as a means of regulating regional monopolies in the U.S. railroad industry. Unlike the railroads, however, aviation and maritime operations can, provided materials and equipment for transportation exist, be freely extended anywhere, and one 'foot' always in the partner's territory [and ready for action]. The Japanese claim that it is all the more for this very fact that, "international cooperation is vital above all else; yet, U.S. recognition of this is not adequate." But, from another perspective, the U.S. may also embrace similar feelings toward Japan with other issues on trade friction such as the case of automobiles.

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SCIENCE AND TECHNOLOGY

VLSI COOPERATIVE RESEARCH LABORATORY REPORT

Gist of Report

Tokyo GIST OF THE RESEARCH REPORT in Japanese 26 Mar 80 pp 1-2

[Report by Director Yasuo Tarui of the VLSI Cooperative Laboratory:  
"Gist of the Research Report"]

[Text] The cooperative laboratory is one which incorporates a number of new attempts. In this vein I believe that the research mode associated with a cooperative laboratory has some interesting features, and I will first describe the manner by which research is pursued and follow its course after which I hope to introduce some of the more important research results.

The first feature of cooperative research is the assembling of many people from the respective companies at a single site and truly form a single body engaged in bona fide cooperative research. The second feature in the project is initiated in very short time and quickly completed. In view of these very severe boundary conditions, we stressed the following points in setting up this cooperative research.

First of all, the themes were selected to serve as the source of basic information to future VLSI development and also to be useful to all the cooperating companies. In this manner, every effort was made to select basic and common themes. Because of this viewpoint, equipment to manufacture basic items became an important theme. Other efforts were directed at the assurance of personnel, assignment of themes and assignment of personnel.

A survey was made of the number of inventors credited with patents to serve as an index of how effective this cooperative research was. As is to be expected, more than half of the patents were the work of a single person, but 16 percent of the patents were granted to a group comprised of several people from a number of different companies, and we feel that considerable cooperative research took place.

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At the same time, a check was made to determine just how the personnel and research results increased. The plans at the temporary business office on the Kasumigaseki Building for total manpower and their execution including the plans for a clean room showed that the buildup in manpower followed the plans by a year. The patents followed the buildup in personnel by about a year. Now, research disclosure tables both domestic and abroad give phase differences of the order of 3 years or more. Here again we feel that this was the result of our best efforts, and this phase difference represents a minimum value that accompanies hard test operation.

As mentioned before, the research themes were mainly directed at fine finishing technology and crystals, and it was decided to stick to only the basic and commonly occurring subjects in the other areas. The major research themes and the results are listed in the table given at the end of this report.

Let me explain this table in a simple manner. The direct engraving or transcription type mask formation mode of the electron beam engraving device shown at the left is basically very important and is classed under a single point of importance. The two practical units of VL-R2 and VL-S2 which aim at the range of a few microns to submicron levels of very fine operation were produced. They possess the characteristics of raster scan and vector scan respectively, and both have the capability of engraving 1 micron line width patterns on a 100 mm $\phi$  wafer in 10 plus minutes, and it is thought that the mask is adequately fast even for direct engraving.

In addition, the electric field radiation gun mode type VL-F1 was developed which is of advantage, theoretically at least, in patterns of the order of 0.5 micron or less, and an engraving device which uses current above that of LaB<sub>6</sub> in this region was developed.

A data treatment software system (AMDES) was developed to resolve the problems associated with electron beam engraving such as mutual interference when patterns come close together, strain in the electron optical system, and deformation due to wafer return to original state together with equipment development.

It is possible to make direct engraving on wafers with an electron beam, but the transcription method using masks has greater potential of being more economical for mass production, and four types of transcription equipment were developed and tests were conducted on two types for future reference.

In another direction, a transcription use mask requires very fine patterns where VLSI is involved, and the density becomes very large. Based on the concept that an electron beam is suited to the examination of these masks, a mask examination device VL-M11 of high resolution and speed was developed.

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The 2 modes of step and repeat mode VL-SR2 for the 1 micron class resolution and for ultraviolet mirror reflection lens mode VL-MR1 were developed for transcription.

In the area of x-ray transcription, the VL-X1 was developed which incorporates various ideas designed to improve the throughput which was a problem in the past. At the same time, the real section of electron beam transcriptions was examined by two modes for which test equipment was produced, and the results of these tests indicated the promising nature of this type of transcriptions.

The etching of a base plate using regist pattern by this type of light exposure is dry etching, and the factors responsible for the problems experienced from the past such as lack of uniformity and poor reproducibility were established after which the VL-DE2 device which overcomes these shortcomings was developed.

The silicon wafer which serves as base plate for this type fine finishing is also important, and the main problems pursued here were the very fine defects and warp which are problems in VLSI and the use of large openings up to 125  $\mu\text{m}$  were pursued. These were studied on an overall basis, but a detailed study was made on the effects of oxygen and carbon present in the wafer, and the permissible contents of these elements in the wafers were established. In addition, heating and cooling conditions which will not cause warpage were studied.

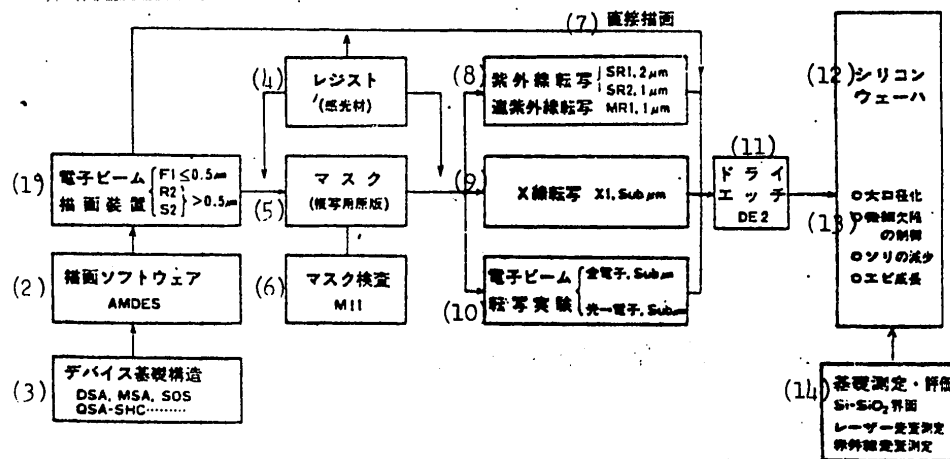
New developments along the lines of Si-SiO<sub>2</sub> interface trap which is an important factor which limits ultimate fineness, measurement of device operation by laser scanning, and temperature measurement by ultraviolet scanning were obtained in the area of basic measurements and evaluations.

In addition, new proposals were made on methods such as QSA-SHC for making memory cells of minimum area given the line width to lay the foundation for devices.

Finally, I wish to thank the government related people, the participating companies, and Director Nebashi for their participation on this initial cooperative laboratory and assurance of its success and to all the people of the laboratory group for their guidance and cooperation.

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Outline of Basic and Common Technology Developed  
by the Cooperative VLSI Research

## Key:

1. electron beam engraving device
2. engraving software
3. basic device construction
4. resist (light exposure material)
5. mask (base plate for transcription)
6. mask examination
7. direct engraving
8. ultraviolet transcription for ultraviolet transcription
9. x-ray transcription
10. electron beam transcription test (all electrons sub  $\mu\text{m}$ , light  $\rightarrow$  electrons sub  $\mu\text{m}$ )
11. dry etch
12. silicon wafer
13. increasing hole diameter, control of fine defects, reducing warp-age, epitaxial growth
14. basic measurements and evaluations: Si-SiO<sub>2</sub> interface, laser scanning measurements, infrared scanning measurements

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Report Examined: Its Accomplishments, Issues

Tokyo NIHON SANGYO SHIMBUN in Japanese 3, 4 Apr 80

[3 Apr 80 p 1]

[Text] Part 1. The cooperative laboratory of the VLSI Technology Research Group which is a government and private effort to engage in research and development on super LSI (large scale integrated circuits) technology ended 4 years of research and development efforts in March. The research group itself will continue to function in order to handle patents and to return or dispose government subsidies, but the cooperative laboratory which played the central role in the research and development will be dissolved as of June. Ever since its inception, this cooperative laboratory has always been a sore subject of the electronics industry with events such as the ridicule as "a party atmosphere laboratory where researchers from rival companies gather and live it up," criticism from the United States in line with the frictions between Japan and the United States on semiconductor production, and the problems in development of leading equipment. With its dissolution coming to a head, the record over the past 4 years and the subjects covered will be reviewed.

"We were able to meet our targeted goals." This was the statement from Manager Yasuo Tarui at the research results disclosure meeting held at Sankay Hall in Otemachi of Tokyo on 26 March. It seemed as though he were full of confidence as he seemed to be proclaiming that the results realized by this cooperative laboratory were the tops in the world. On the other hand, nothing was presented during this 2-hour address which gave any hint of what distance in technology had created between it and other electronic makers of the world and just when some practical results would be forthcoming.

Equipment Exceeding IBM

Each cooperative company becomes tight lipped with just the mention of the term "VLSI" even before any discussion on the evaluation of results is broached. "Since Japanese-American semiconductor friction has surfaced, we want to avoid any chance of stimulating any more American feelings." This was the explanation of a related party. "On the other hand, Japan may presently be ahead of IBM at the present time where the technology level for VLSI is concerned." This again from the same concerned party.

This research cooperative was aimed at developing power to compete with the giant of the computer industry IBM, and it was launched in the spring of 1976 under the sponsorship of the Ministry of International Trade and Industry. It consists of a total of seven companies including Fujitsu, Hitachi Limited, Mitsubishi Electric, Nippon Electric, and

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Tokyo Shibaura Electric along with the joint computer laboratory of the Fujitsu-Hitachi-Mitsubishi group and the Nippon Electric-Toshiba information system of the Nippon Electric-Toshiba group. The research funds totaled as much as 70 billion yen of which government subsidies accounted for about 30 billion yen.

There were 6 research subjects pursued including 1) very fine finishing technology, 2) crystal technology, 3) design technology, 4) process technology, 5) testing and evaluating technology, and 6) device technology. This cooperative laboratory was staffed by about 100 researchers from each of the 5 companies and the Electrotechnical Laboratory of the Agency of Industrial Science and Technology, and it pursued development on basic technology along the lines of the 5 companies' themes avoiding any area which would infringe upon each company's knowhow.

Manager Tarui gave the following account of the results achieved at this cooperative laboratory located at Miyazakidai in Kawasaki-shi. "I feel that the technological level is comparable with IBM. I feel that we are better than IBM in certain areas such as electron beam exposure equipment."

It is necessary to engrave circuits of 1 micron or less width for a VLSI which incorporates several megabits into a 1 centimeter square silicon chip. The electron beam exposure unit is the focal point of this fine finishing technology.

There are three types of electron beam exposure devices developed by this cooperative laboratory. These include an electric field radiating electron gun type which can engrave high resolution patterns of 0.5 micron or less, variable shape electron beam exposure device which can engrave 0.5 micron or larger pattern at high speed, and an electrical-mechanical hybrid device. Of these three devices, the variable shaped beam device is said to have produced outstanding results.

"The Itek and Varian corporations in the United States have developed and are marketing an electron beam exposure device which is based on some Bell Company patents and operates on a principle similar to the line scanning process of a television picture tube. Now, this device uses a silicon base plate of 4-inch diameter (about 10 centimeters) for the exposure which at the fastest requires 27 minutes. In contrast, the variable beam shape exposure device developed by this cooperative laboratory requires 18 minutes. Furthermore, this variable shape beam device becomes more advantageous the more fine the patterns become." This was the statement from a certain concerned party.

#### Great Advances in the Crystal Area

Crystal technology which normally displays no outstanding feature has also undergone great advances. It becomes necessary to control the

trace levels of oxygen and carbon in order to remove defects and curvature in crystals 1 micron or less. It is said that this laboratory has succeeded in resolving this problem. "There was an almost equal representation of the different companies at the crystal technology research laboratory, and this situation was close to the ideal for a cooperative effort. It was not overstating the case to say that Japan's might in the crystal area had been mobilized," according to Manager Tarui.

A hidden result achieved by this cooperative research is the upgrading of the peripheral technology. There are many devices such as transcription devices operating on ultraviolet light, and fluorescent and transcription technology have been improved. The number of operating companies was as much as 25. One of these cooperating companies said to the effect that "Where a semiconductor company normally says very little in order not to leak out any information, this organization into a single organization made possible the clear elucidation of any development point relative to equipment making for very good work."

#### Superior Personnel and Abundant Funding

Director Masato Nebashi of this research cooperative said, "This cooperative research compiled its outstanding record because of its opportune timing, and because it was possible to mobilize superior personnel and gather ample funds. At the same time, setting the term of this joint effort to 4 years had the effect of enhancing concentrated effort."

When seen from these viewpoints, this cooperative research has compiled a marvelous record, and there seems to have been no failure. Certainly everyone concerned recognizes the magnitude of these results. On the other hand, can we accept these results completely with no further ado? Are there any problems which have been left for future resolution?

[4 Apr 80 p 1]

[Text] Part 2. "The super LSI production industry in time will assume the status of a coin laundry. There will be production equipment everywhere which will be changed as the users change, and they will use the facility to produce the VLSI they need. Such an age may appear."

There was a panel discussion convened on the theme "future of VLSI and spinoff effects" after the research results disclosure meeting of 26 March. One of the panelists, Professor Junichi Nishizawa of Tohoku University, surprised the gathering with the above statement.

#### Create Diverse Needs

Integrated circuitry has achieved the status of being called "industry's bread." Integrated circuitry has been introduced into nearly all areas starting off with computers and extending into various household

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electrical appliances and industrial machinery. This penetration will become ever more pronounced as the degree of integration is increased and VLSI becomes more practical. It may be that all industries will some day be unable to operate without VLSI. Even though the term "coin laundry" may be excessive, it seems inevitable that in the future a number of diverse needs will be created for VLSI in all industries. Said panelist Professor Hisashi Yanai of the University of Tokyo, "VLSI may one day become a basic industry, the same as the iron and steel industry."

There is expected the very popular use of VLSI in the manner discussed above, and the companies who are looking to VLSI production are not limited to the five companies who formed the cooperative group. There are a number of makers which have purchased electron beam exposure equipment for VLSI production such as Oki Electric Industry and Matsushita Electric Industry and have embarked on their independent development. This movement is not limited to semiconductor makers and electrical makers but to other industries as well.

VLSI which is undergoing spectacular rise in the degree of integration that can be woven into any system according to the needs of the application at hand. In other words, it can be fitted in with the knowhow associated with the system a company has amassed on its own. Such being the case, there is the risk that this knowhow may be leaked out should one order VLSI installation without exercising due caution. The independent development of VLSI on the part of companies in diversified industrial areas is thought to be the result of this need to protect the secrecy of their knowhow.

This research cooperative attacked problems whose research and development involved risks too great to be borne by a single company in the form of a national project which was the subject of this five-company effort. This risk was shared by the five companies as well as by the country in the pursuit of the research and development efforts. The net result was that the overall Japanese VLSI technology including peripheral technology made spectacular advances. On the other hand, "a technology level difference was created between the research cooperative member company and a company which did not belong to the cooperative but conducted its independent VLSI development," (according to a certain semiconductor related person) was also a situation which emerged.

This is why some makers who initially had hoped to participate in this cooperative effort but who had been denied participation because they had no large computers to this day do not mask their regret on their inability to have participated.

There is the policy to disclose the patents which were acquired by this research cooperative, and the technology will most likely eventually become available to industries other than the member cooperative companies. On the other hand, the knowhow derived from this cooperative

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research will not readily be transferred to other makers. There should be at least some preference granted makers other than those which participated in the cooperative research.

#### Dissatisfaction on the Part of Nonparticipating Industries

The initial aim of this research cooperative was to counter IBM. While this objective has not surfaced to the stage that it is being shouted from the rooftops, "the situation has not changed" (according to the top echelon of the Ministry of International Trade and Industry). Even Manager Tarui of the research cooperative who boasts, "We have exceeded IBM" admits "IBM certainly is powerful. It has a large number of capable researchers and has strength in going into new areas. When this cooperative research is added, I hope that the different companies will continue to best IBM." He voiced his concern in this manner.

Certainly, it does not seem to have been a mistake for these five companies to get together to prepare for the future and be able to cope with the giant IBM as well as to make up for their admittedly weak domestic computer makers welfare. On the other hand, VLSI is not limited to large computers but is a technology which can be used to integrate all electronic circuitry including medium and small computers as well as television, and it is to be expected that some dissatisfaction will be created in the ranks of those makers who were denied participation in this cooperative effort and whose technology level has seen large differential develop compared to the participating companies. A certain concerned party said, "A policy to level out this differential may be pursued by the research cooperative."

The Japanese-American semiconductor friction basically is due to the difference in the fundamental thinking on the parts of these two countries. The United States which takes a dim view of the industrial policy concept looks on research and development by a cooperative laboratory mode as a type of cartel action. When the United States government undertakes a certain development, it advances funds to a number of industries and makes them compete in this development and then selects the most promising proposal. This is free competition at its best.

On the other hand, when the country promotes a project in Japan, first of all, there is no developmental competition on the same theme. "The Ministry of the Treasury will not allow such a move claiming it to be a multiple expenditure. We too believe that the American system of a number of industries engaging in competitive development is more healthy, but this may be asking too much in Japan where we do not possess such fiscal margins" according to a certain top member of the research cooperative.

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## Some Questions on the Cooperative Research Mode

There are very few examples in which a cooperative group established a joint laboratory and assembled researchers from the different member companies under one roof. In this sense this present cooperative project may be classed as one of the national projects. The results demonstrated the high efficiency of the cooperative research mode. At the same time, it was found that any industrial induction policy can be effectively enhanced using research and development by this mode as a springboard. This example may result in the greater use of this mode for national projects. On the other hand, the principal problem left by this cooperative research is the international friction arising from this "cartel" formation approach. There is also the differential created between domestic companies divided into those which did and those which did not participate. These may be the problems that need to be resolved.

## Principal Results of the VLSI Cooperative Research Laboratory

- 1 52年5月2 可変寸法電子ビーム描画装置開発
- 3 55年3月4 電気・機械ハイブリッド形電子ビーム描画装置開発
- 6 55年9月6 紫外線転写装置開発
- 8 55年3月8 遠紫外線転写装置開発
- 9 54年5月 電界放射形電子ビーム露光装置開発 10
- 電子ビーム縮小転写露光装置開発 12
- 1 55年2月2 電気・機械ハイブリッド形高速電子ビーム露光装置開発
- 12 電子ビームによるマスク構造装置開発
- 電子ビーム一括転写装置開発
- 新しいVLSIメモリ基本構造開発
- 3 55年3月 高性能ドライエッチング装置開発
- 電子ビーム描画ソフトウェアシステム開発
- 14 高速可変寸法電子ビーム描画装置実用化

## Key:

- 1. May 1977
- 2. development of variable beam dimension electron beam engraving method
- 3. March 1978
- 4. development of electrical-mechanical hybrid electron beam engraving method
- 5. September 1978
- 6. development of ultraviolet transcription device
- 7. March 1979
- 8. development of far ultraviolet transcription device
- 9. May 1979
- 10. development of electric field radiation mode electron beam exposure device
- development of electron beam reduction transcription exposure method
- 11. February 1980
- 12. development of electrical-mechanical hybrid type high speed electron device [Key continued on following page.]

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- development of electron beam mask examination device
- development of electron beam vivid transcription method
- basic construction concept of new VSLI memory
- 13. March 1980
- 14. development of high performance dry etching device
- development of electron beam engraving software system
- practicalization of high speed variable dimension electron beam engraving device

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SCIENCE AND TECHNOLOGY

SMALL LWR DEVELOPMENT FORMAT REVISED

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 22 Aug 80 p 1

[Text] The Ministry of International Trade and Industry will set out in JFY 1981 on the development of medium and small light water reactors as one phase of its domestic nuclear reactor development program applying the light water reactor technology cultivated through experience with large type reactors. The method of development will see the abandonment of the competitive race (competitive development) concept between nuclear reactor makers which had been initially planned and the adoption of a policy of an "all Japan mode" in which the combined capabilities of government, academia, and private industry will be mobilized. This new approach not only was the result of some resisting sentiments among the nuclear reactor makers with regard to competitive development but also due to the introduction of competitive development necessarily requires that a development target be clearly defined such that proceeding along the lines of strictly competitive development could involve some awkward situations. As a result, the "all Japan Mode" which involves specialists from the governmental, academic, and private industrial areas merged into a "Medium and Small Multiple Purpose Light Water Reactor Development Committee" (provisional name) will be established in JFY 1981. This committee decided it will be more prudent to hammer out the image of this developmental approach and then go into conceptual design during the latter half of 1981 and 1982.

Makers Resist Competitive Development

The development of medium and small light water reactors is a new policy of this ministry which came to the fore and which is planned for actual development from 1981 on. The light water reactor technology which the Japanese nuclear reactor makers have cultivated during their abundant experience with large light water reactors for electrical power generation (these reactors presently exceed more than a million KW each) will be the base for the development and application of the "Japanese type" light water reactor of the medium and small class (200,000 to 400,000 KW) according to this project.

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This situation is the result of that associated with large type reactors which face severe siting difficulties despite the cries for more power generation because the development of medium and small reactors will bring out a product which is more readily adaptable to underground construction and power generation near the consumer and promote siting of power plants. At the same time, 1) medium and small reactors will be developed suitable for export to developing countries with deeprooted need for this type reactors and 2) medium or small reactor whose nuclear heat will be used for industrial needs is targeted which can be used only within a combinat. In this manner a number of applications are envisioned for this new reactor development project.

Another objective is to cut through the attitude characteristic of Japan which has an allergic reaction to large type reactors and develop medium and small reactors for which acceptance can be more easily gained.

This ministry had originally intended to adopt a development mode in which the various makers submitted in competitive manner their ideas on this new type reactor and to award the maker who proposed the most superior idea the contract for conceptual design.

In the House 55 Plan for the development of prefab homes, very effective results were obtained by competitive development, and this was one rationale for this initial plan. On the other hand, competitive development was a target of dissension from private sources and considerable resistance was created. As a result, the specialists from the different areas were selected to draw up the image of this new "all Japan mode" reactor.

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